AMENDMENTS
In the Claims

Current Status of Claims

1.(**currently amended**) A method of manufacturing an oriented film comprising the steps of:

forming a blend including at least two polymers P1 and P2, where both are at least partly crystalline at a temperature below 100°C where the polymer P1 has a mechanically determined melting point which is at least 20°C higher than a mechanically determined melting point of the polymer P2,

extruding the blend to form a film and

stretching the film to form a stretched film, where the polymers form separate phases in the stretched film, and the polymer P2 in its unoriented state at 20°C exhibits a coefficient of elasticity (E1) which is at least 15% lower than ~~a coefficient of elasticity~~ (E2) of the polymer P1, and stretched film comprises a polymer alloy including fibrils of the polymer P1 surrounded by the polymer P2, where~~by~~ each fibril extends mainly in one direction and has a mean of a width and a thickness ~~which as a mean of these two dimensions~~ that is less than or equal to about 5μm, and wherein the stretching step includes the steps of after the extruding steps drawing-down the film while both components are at least partially molten, and at a later stage, hot stretching the film while the polymer P1 is in a solid state and the polymer P2 is molten or semimolten to selectively orient the polymer P1, such that an elongation at break in the direction of this hot stretching, determined by slow drawing at 20°C, is at least 25%, the hot stretching being carried out by drawing the film over a frictionally withholding device.

2.(**currently amended**) The method according to claim 1, wherein the stretching step further includes the step of, after the hot stretching, ~~a~~ further stretching the film while both components P1 and P2 are in their solid state, in such a manner that the product film has an elongation at break at 20°C (by slow drawing) of at least 25% in any direction.

3.(**currently amended**) The method according to claim 1, wherein the fibrils are flat having an average thickness of less than or equal to about 1μm and ~~with~~ an average width of less than or equal to about 5μm.

4.(**currently amended**) The method according to claim 1, wherein in order to reduce cross

dimensions of the fibrils, the molten blend during extrusion is passed through at least one screen or grid located in a chamber immediately upstream of an exit orifice of an extrusion device, the chamber having a gap higher than a gap of the exit orifice.

5.(**currently amended**) The method according to claim 4, wherein each of the grids has walls extending several millimeters in the direction of the flow of the molten blend.

6.(**currently amended**) The method according to claim 5, wherein the major walls in each such grid are slanted so that each forms an angle between about 10° to about 70° to the major surface of the flow entering the grid.

7.(**currently amended**) The method according to claim 6, wherein the slanting and the wall thickness and distances between the walls are such that in a longitudinal section of the device perpendicular to major surface of the flow as this enters the grid, there are at least four such walls.

8.(**currently amended**) The method according to claim 6, wherein at least two grids, where in the such walls of one grid are slanted in the opposite direction to the walls of the other grid.

9.(**currently amended**) The method according to claim 1, wherein in succession to the extrusion and ~~attenuation~~ stretching of the blend while both the polymer P1 and the polymer P2 are molten, the film is first cooled to solidify the polymer P1 and the polymer P2, thereafter the film is heated in air-lubricated engagement with a heating body of controlled temperature to melt or at least partially melt the polymer P2, while keeping the polymer P1 solid, and immediate thereafter, while the polymer P2 still is at least partially molten and the polymer P1 is solid, the film is subjected to the ~~the~~ selective orientation of the polymer P1 and subsequent solidification of the polymer P2.

10.(**currently amended**) The method according to claim 1, wherein the frictional is withholding device comprises one or more bars with rounded edges over which the film is dragged while following an adjustable arc of the bar edge, and the bar or bars are maintained at a temperature which prevents the film from sticking to the edge or edges, and the length of travel in contact with the edge or edges is adapted to prevent the polymer P2 wholly solidifying.

11.(**currently amended**) The method according to claim 9, wherein at least the process steps from and including extrusion to and including the solidification of the polymer P2 are carried out in-line, whereby the line also comprises a hold-back device acting between the cooling and the subsequent heating.

12.(**currently amended**) The method according to claim 11, wherein the film is extruded as a flat film, and the controlled hold-back between cooling and subsequent heating is established by a roller arrangement, which also may supply the ~~the~~ cooling.

13.(**currently amended**) The method according to claim 11, wherein the film is formed and treated in tubular form from extrusion and at least to the final solidification of the polymer P2, whereby the controlled hold-back between cooling and subsequent heating is established by one or more circular rings with rounded edges over which the film is dragged while following an adjustable arc of the rounded edge, and the ring or rings are maintained at a temperature which prevents the film from sticking to the ~~the~~ edge or edges.

14.(**currently amended**) The method according to claim 11, wherein the heating is carried out with the film in air-lubricated engagement with two heating bodies of which is provided one on each side of the film.

15.(**currently amended**) The method according to claim 1, wherein the film immediately after the extrusion is cooled to solidification of the polymer P1 while the polymer P2 is kept molten or semimolten, and further in immediate succession, the selective orientation of the polymer P1 over a frictionally withholding device is carried out with the polymers in such states.

16.(**currently amended**) The method according to claim 15, wherein the frictionally withholding device comprises one or more bars with rounded edges over which the film is dragged while following an adjustable bow-length of the edge, and the bar or bars and the length of travel in contact with the edge or edges is adapted to prevent the polymer P2 wholly solidifying.

17.(**previously presented**) The method according to claim 15, wherein the cooling to the state is carried out by air-lubricated engagement of the film with a cooling body of controlled temperature.

18.(**previously presented**) The method according to claim 17, wherein the cooling is carried out with the film in air-lubricated engagement with two heating bodies, one on each side of the film, the spacing between the heating bodies preferably being adjustable.

19.(**previously presented**) The method according to claim 2, wherein the further stretching is carried out in the same longitudinal direction as the hot stretching of the film.

20.(**currently amended**) The method according to claim 19, wherein by a suitable selection of the conditions for the different stretching processes, and optionally by addition of a finely dispersed fracture-promoting material to the extruded blend, the longitudinal orientation after full solidification is adapted to produce locations of rupture of the polymer P1 fibrils and in connection with such rupture extra orientation of the polymer P2 in and around the locations, the locations being generally extended in a linear fashion at an angle to the direction of orientation.

21.(**currently amended**) The ~~A~~ method according to claim 19, wherein the further stretching is carried out at around50°C or at a lower temperature.

22.(**currently amended**) The method according to claim 19, wherein in succession to the further stretching, transverse stretching is carried out while the polymer P1 and the polymer P2 are solid.

23.(**previously presented**) The method according to claim 22, wherein the further stretching is carried out under allowance of a simultaneous longitudinal contraction, where the longitudinal contraction is achieved by forming transverse pleats in the film prior to the transverse stretching, and the latter is carried out by means of a tenter frame.

24.(**previously presented**) The method according to claim 2, wherein the further stretching is carried out transversely of the preceding longitudinal orientation of the film.

25.(**previously presented**) The method according to claim 24, wherein the film is allowed to shrink in said longitudinal direction, where the shrinking is achieved by forming transverse pleats in the film prior to the transverse stretching, and the latter is carried out by means of a tenter frame.

26.(**previously presented**) The method according to claim 1, wherein a minor surface layer is coextruded on at least one side of the blend to enhance bonding properties and/or modify frictional properties of the film.

27.(**currently amended**) The method according to claim 1, wherein the polymer P1 comprises polypropylene polyamide or polyethylene terephthalate, and the polymer P2 ~~mainly~~ comprises a propylene copolymer or polyethylene.

28.(**currently amended**) The ~~A~~ method according to claim 27, wherein the polypropylene is a crystalline copolymer of propylene.

29.(**previously presented**) The method according to claim 27, wherein the polyethylene is a crystalline copolymer of ethylene.

30.(**previously presented**) The method according to claim 1, wherein after the end of the mentioned steps, the film, which exhibits a uniaxial or unbalanced orientation, is laminated to one or more similarly or differently manufactured films of uniaxial or unbalanced biaxial orientation, whereby the films are arranged so that their main directions of orientation cross each other.

31.(**currently amended**) The ~~A~~ method according to claim 1, wherein additionally to the mentioned steps the film is cut into narrow longitudinally oriented tapes.

32.(**currently amended**) A method of forming a film or sheet of thermoplastic polymer alloy in which there is formed an intimate blend of polymer material P1' and polymer material P2', the blend is extruded through a die and the extruded film is stretched after extrusion in which the flow passage through the die comprises an exit orifice having an exit gap, wherein upstream from the exit orifice there is provided a grid chamber comprising one or more grids through which the blend

passes, the grid or grids having at least 4 (in the longitudinal sections perpendicular to the main surfaces to the flow) closely spaced lamellae having walls extending several millimeters in the direction of the flow, and, between the lamellae apertures of a size selected to reduce the average size of the dispersed phase of polymer material P1' or polymer material P2' in the blend, the grid or grids being located at a position in the chamber where the gap is wider than the exit gap, the grid chamber further comprising a gap reduction portion between the screen and the die exit wherein the gap through which the blend flows is reduced at least part way to the gap of the die exit.

33.**(previously presented)** The method according to claim 32, wherein the lamellae in each such grid are slated so that each forms an angle between about 10 to about 70° to the major surface of the blend flow entering the grid.

34.**(previously presented)** The method according to claim 33, wherein the major lamellae in each such grid are substantially planar.

35.**(previously presented)** The method according to claim 33, wherein the lamellae are substantially parallel to the flow as it enters the grip.

36.**(previously presented)** The method according to claim 34, wherein at least two such grids which mutually are oppositely slanted in relation to the direction of the blend flow entering the grid.

37.**(previously presented)** The method according to claim 32, wherein there is coextruded a surface layer at least on one side of the blend flow.

38.**(currently amended)** The method according to claim 32, wherein polymer material P1' and polymer material P2' are incompatible to such an extent that they exist as separate phases in the final film, but are compatibilized either by use of an alloying agent or mechanically by sufficient mixing and attenuation, and polymer material P2' in its unoriented state at 20°C exhibits a coefficient of elasticity (E1) which is at least 15% lower than a coefficient of elasticity (E2) of polymer material P1', and further by adaptions of rheological conditions, percentages of the components, and conditions for mixing and extruding a dispersion of microscopically fine fibrils or fibril network of

polymer material P1' surrounded by polymer material P2' is formed in the alloy, whereby each fibril extends mainly in one direction and has a thickness around or lower than 5μm, and width at least 5 times it thickness, and further where the film is stretched after at least polymer material P1'has been solidified.

39.**(previously presented)** The method according to claim 38, wherein the stretching is transverse to the direction of the fibrils.

40.**(previously presented)** The method according to claim 39, wherein the film is allowed to contract in the direction of the fibrils during the stretching, where the contractions are introduced by a preceding fine transverse pleating of the film.

41.**(previously presented)** The method according to claim 40, wherein the step of stretching transverse to the direction of the fibrils is preceded by stretching in the direction of the fibrils while the latter are solid.

42.**(currently amended)** The method according to claim 38, wherein polymer material P1' comprises polypropylene, polyamide or polyethylene terephthalate, and polymer material P2' ~~mainly~~ comprises a propylene copolymer or polyethylene.

43.**(previously presented)** The method according to claim 42, wherein the polypropylene is a crystalline copolymer of propylene.

44.**(previously presented)** The method according to claim 42, wherein the polyethylene is a copolymer of ethylene.

45.**(previously presented)** The method according to claim 38, wherein the film is given a strong uniaxial or unbalanced biaxial orientation, and subsequently the film is laminated to one or more similarly or differently manufactured film of uniaxial or unbalanced biaxial orientation, whereby the films are arranged so that their main directions of orientation cross each other.

46.**(previously presented)** The method according to claim 38, wherein subsequently the film is cut into narrow longitudinally oriented tapes.

47.**(currently amended)** The method according to claim 32, wherein polymer material P1'is chosen to exhibit desirable barrier properties, and polymer material P1'and polymer material P2'are incompatible to such an extent that they exist as separate phases in the final film, but are compatibilized either by use of an alloying agent or mechanically by sufficient mixing and extension, and further by adaptions of rheological conditions, percentages of the components, and conditions for mixing and attenuation a dispersion of microscopically fine fibrils or fibril network of polymer material P1' surrounded by polymer material P2' is formed in the alloy as whereby each fibril extends in one main direction, has a thickness around or lower than 5μm and has a width at least 5 times its thickness.

48.**(currently amended)** The method according to claim 32, wherein polymer material P1' and polymer material P2' are incompatible to such an extent that they exist as separate phases in the final film, but are compatibilized either by use of an alloying agent or mechanically by sufficient mixing and extrusion, and further by adaptions of rheological conditions, percentages of the components, and conditions for mixing and attenuation a dispersion of microscopically fine fibrils or fibril network of polymer material P1' surrounded by polymer material P2' is formed in the alloy, whereby each fibril extends mainly in one direction, has a thickness around or lower than 5μm, where there is added a volatile expansion agent prior to or during the extrusion, which agent is soluble in polymer material P2' but generally not in polymer material P1', whereby expansion is takes place after extrusion.

49.**(currently amended)** An extruded oriented film which is in the form of a crosslaminate, in which it is laminated to another oriented film, whereby the main directions of orientation cross each other, or is in the form of a rope, twine or woven-tape products, the film comprising a layer of alloy of at least two polymers P1 and P2, which both are at least partly crystalline at temperatures less than 100°C, wherein the polymer P2 in its unoriented state at 20°C exhibits a coefficient of elasticity (E1) which is at least 15% lower than a coefficient of elasticity (E2) of the polymer P1, and the alloy comprises a dispersion of microscopically fine fibrils or fibril network of the polymer P1 surrounded

by the polymer P2, wherein each fibril extends mainly in one direction and ~~generally~~ has a width and a thickness wherein ~~the~~ a mean of ~~these two dimensions is around or lower~~ the width and the thickness is less than or equal to about 5μm, wherein

a) the polymer P1 fibrils are flat and ~~generally~~ substantially parallel with the main surfaces of the film, the fibrils have a ~~with~~ thicknesses ~~generally around or lower~~ less than or equal to about 1μm and the fibrils have a width at least 5 times their thickness, and/or

b) the oriented film exhibits locations of rupture of the polymer P1 fibrils, where the fibrils are broken and where the~~, which~~ locations extend in a generally linear fashion across the film at an angle to the direction of orientation.

50.**(previously presented)** The film according to claim 49, wherein a minor coextruded surface layer on at least one side of the alloy layer to enhance bonding properties and/or modify frictional properties of the film.

51.**(currently amended)** The film according to claim 50, wherein the polymer P1 comprises polypropylene polyamide or polyethylene terephthalate, and the polymer P2 ~~mainly~~ comprises a propylene copolymer, or polyethylene.

52.**(previously presented)** The film according to claim 51, wherein the polypropylene is a crystalline copolymer of propylene.

53.**(previously presented)** The film according to claim 51, wherein the polyethylene is a copolymer of ethylene.

54.**(previously presented)** The film according to claim 49, wherein the form is a crosslaminate.

55.**(previously presented)** The film according to claim 49, wherein the form is rope, twine or woven-tape products.

56.**(currently amended)** An extruded film comprising a layer of an alloy of at least two

polymers P1 and P2, which both are at least partly crystalline at temperatures under 100°C and are incompatible to such an extent that they exist as separate phases in the final film but are compatibilized sufficiently for practical purposes, comprising a dispersion of microscopically fine fibrils or fibril network of the polymer P1 surrounded by the polymer P2, wherein each fibril extends mainly in one direction, where the fibrils of the polymer P1 are flat and generally parallel with the main surfaces of the film with thicknesses generally around or lower than 1μm, and width at least 5 times the thickness, and where the polymer P1 is chosen to exhibit desirable barrier properties and further comprising, in longitudinal cross-section perpendicular to the main surfaces of the film, at least 4 die lines.

57.(**previously presented**) The film according to claim 56, further comprising a minor coextruded surface layer on at least one side of the alloy layer to enhance bonding properties and/or modify its frictional properties.

58.(**currently amended**) The film according to claim 56, wherein the polymer P1 ~~consists of~~ comprising EVOH, vinylidene chloride polymers or polyamide.

59.(**previously presented**) The film according to claim 56, wherein the film is uniaxially or biaxially oriented and is laminated to another oriented film, whereby the main directions of orientation cross each other.

60.(**currently amended**) A cellular expanded film made by extrusion in the presence of an expansion agent, where the film is made from an alloy of at least two polymers P1 and P2, which both are at least partly crystalline at temperatures under100°C, the alloy comprising a dispersion of microscopically fine fibrils or a fibril network of the polymer P1 surrounded by the polymer P2, where~~by~~ each fibril extends mainly in one direction and is flat, each fibril has a ~~with~~ thicknesses ~~generally around or lower~~ less than or equal to about 1μm, and each fibril has a width at least 5 times ~~the~~ its thickness.

61.(**currently amended**) The film according to claim 60, wherein the film is uniaxially or biaxially oriented and is laminated to another film, where~~by~~ the main directions of orientation cross

each other.

62.(**previously presented**) The film according to claim 60, wherein the film is in the form of rope, twine or woven-tape products.

63.(**previously presented**) The film according to claim 60, wherein the film is in the form of split fibre products.

64.(**currently amended**) The film according to claim 60, wherein the polymer P2 in its unoriented state at 20°C exhibits a coefficient of elasticity (E1) which is at least 15% lower than ~~an~~ a coefficient of elasticity (E2) of the polymer P1.

65.(**currently amended**) The film according to claim~~s~~ 56, wherein the polymer P2 is a copolymer of propylene or polyethylene.

66.(**currently amended**) The film according to claim 56, wherein, in the alloy, a weight proportion of the polymer P1 is in the range 5 to75 %.

67.(**previously presented**) An apparatus for extruding a thermoplastic material comprising a die having an exit orifice through which the molten material flows and stretching means for stretching the material after it is extruded by at least two steps, in the first of which the material is stretched longitudinally by first stretching means whilst at a high temperature, and in the second of which the material is stretched longitudinally by second stretching means at a lower temperature, comprising also means for cooling the extruded material between the two stretching means, the cooling means comprising a frictional device arranged for contact with the extruded material, and further comprising stretching means downstream from the second stretching means, and additional cooling means between the second stretching means and the further stretching means.

68.(**previously presented**) The apparatus according to claim 67, wherein the frictional device is provided with holes or is made of microporous metal for inwards or outwards passage of air whereby over and under pressure of air is provided to control the friction between the device and the material.

69.(**previously presented**) The apparatus according to claim 67, further comprising a shock cooling part upstream of the frictional device past which the extruded flow passes and which is cooled by a flow of cooling medium through its interior.

70.(**previously presented**) The apparatus according to claim 69, further comprising a heating means between the shock cooling means and the frictional device, for controlled heating of the material.

71.(**previously presented**) The apparatus according to claim 70, wherein the heating means comprises a pair of fixed heating blocks arranged on opposite sides of the extruded material.

72.(**previously presented**) The apparatus according to claim 67, wherein the die has a grid chamber upstream from the exit orifice comprising one or more grids through which the extrudate passes, the grid or grids being located at a position in the chamber where the gap is wider than the exit orifice gap, the grid chamber further comprising a gap reduction portion between the grid or grids and the exit orifice wherein the gap is reduced at least part way to the gap of the exit orifice.

73.(**previously presented**) An apparatus for extruding a thermoplastic material comprising a die having an exit orifice through which the molten material flows and stretching means for stretching the material after it is extruded by at least two steps, in the first of which the material is stretched longitudinally by a first stretching means whilst at a high temperature, and in the second of which the material is stretched longitudinally by a second stretching means at a lower temperature, comprising also means for cooling the extruded material between the two stretching means, the cooling means comprising a frictional device arranged for contact with the extruded material, where there is provided a grid chamber upstream from the exit orifice comprising one or more grids through which the extrudate passes, the grid or grids being located at a position in the chamber where the gap is wider than the exit orifice gap, the grid chamber further comprising a gap reduction portion between the grid or grids and the die exit wherein the gap is reduced at least part way to the gap of the exit orifice.

74.**(previously presented)** The apparatus according to claim 72, wherein each such grid has walls extending several mm in the direction of the flow.

75.**(previously presented)** The apparatus according to claim 73, wherein the major walls in each such grid are substantially planar and are slanted so that each forms an angle between about 10 to 70° to the major surface of the extrudate flow entering the grid.

76.**(previously presented)** The apparatus according to claim 75, wherein the angle and the wall thickness and distances between the walls are such that, in a longitudinal section of the die perpendicular to the main surfaces of the extrudate flow as this enters the grid, there are at least four such walls.

77.**(previously presented)** The apparatus according to claim 75, further comprising at least two such grids which are slanted in opposite directions to one another.

78.**(previously presented)** The apparatus according to claim 67, further comprising means for coextruding a surface layer at least on one side of the extrudate.

79.**(currently amended)** The apparatus according to claim~~s~~ 67, further comprising means for transverse stretching of the extruded film downstream of the second stretching means.

80.**(previously presented)** The apparatus according to claim 79, wherein upstream of the transverse stretching means there is a longitudinal pleating device.

81.**(previously presented)** The apparatus according to claim80, wherein the transverse stretching means comprises a tenterframe including an oven.

82.**(previously presented)** The apparatus according to claim 81, wherein the oven comprises fixed heated blocks arranged on opposite sides of the material, provided with a heating means.

83.**(previously presented)** The apparatus according to claim 82, further comprising a cooling

block on at least one side of the material, downstream of the heating blocks, the cooling block being provided with a channel for passage of cooling air.

84.**(previously presented)** The apparatus according to claim 82, wherein the heating blocks are formed of microporous metal in fluid contact with channels for passage of heated air, whereby heated air exits the blocks from the surfaces facing the material passing therebetween, to lubricate passage of the material therebetween.

85.**(previously presented)** The apparatus according to claim 67, wherein the further stretching means is a longitudinal stretching means.

86.**(previously presented)** The apparatus according to claim 85, including a laminating station, in which a second sheet material is laminated to the extrudate.

87.**(currently amended)** The apparatus according to claim 86, wherein the extrusion die is a circular die for extruding a tube of material, and which further comprises helical cutting means downstream of the ~~the~~ second stretching station, and upstream of the laminating station, in which the tube of material is helically cut and two plies of the extruded material are laminated to one another with their main directions of orientation arranged at an angle to one another.

88.**(previously presented)** The apparatus according to claim 67, wherein the extrusion die is a flat die.

89.**(previously presented)** An apparatus for extruding a thermoplastic material comprising a die having an exit orifice through which the molten material flows and stretching means for stretching the material after it is extruded, where the die has a grid chamber upstream from the exit orifice comprising one or more grids through which the extrudate passes, the grid or grids being located at a position in the chamber where the gap is wider than the exit orifice gap, the grid chamber further comprising a gap reduction portion between the grid or grids and the exit orifice wherein the gap is reduced at least part way to the gap of the exit orifice and the or each grip comprises at least 4 (in the longitudinal sections perpendicular to the main surfaces of the flow) closely spaced lamellae

having walls extending several mm in the direction of flow of molten material and, between the lamellae having apertures through which the molten material can flow.

90.**(previously presented)** The apparatus according to claim 89, wherein the lamellae in each such grid are slanted so that each forms an angle between about 10 to 70° to the major surface of the extrudate flow entering the grid.

91.**(previously presented)** The apparatus according to claim 90, wherein the lamellae are substantially planar and substantially parallel to the flow as it enters the grid.

92.**(previously presented)** The apparatus according to claim 90, further comprising at least two such grids which are slanted in opposite directions to one another.

93.**(previously presented)** The apparatus according to claim 89, further comprising means for coextruding a surface layer at least on one side of the extudate.

94.**(previously presented)** The apparatus according to claim 89, wherein the extrusion die is a circular die for extruding a tube of material.

95.**(previously presented)** The apparatus according to claim 89, wherein the extrusion die is a flat die.

96.**(previously presented)** The film according to claim 49, wherein the width of the fibrils are at least 10 times the thickness.

97.**(previously presented)** The film according to claim 49, wherein in longitudinal cross-section perpendicular to the main surface of the film, comprises at least 4 die lines.